

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



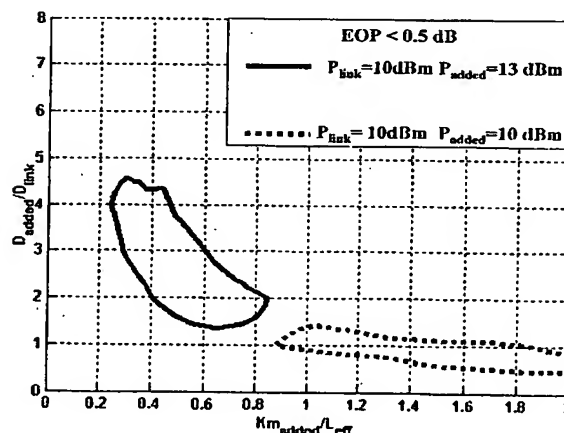
(43) International Publication Date
8 July 2004 (08.07.2004)

PCT

(10) International Publication Number
WO 2004/057779 A1

- (51) International Patent Classification⁷: H04B 10/18
- (74) Agents: BATTIPEDE, Francesco et al.; Pirelli & C. S.p.A., Viale Sarca, 222, I-20126 Milano (IT).
- (21) International Application Number: PCT/EP2002/014730
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.
- (22) International Filing Date: 23 December 2002 (23.12.2002)
- (25) Filing Language: English
- (26) Publication Language: English
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- (71) Applicant (*for all designated States except US*): PIRELLI & C. S.p.A. [IT/IT]; Via Gaetano Negri, 10, I-20123 Milano (IT).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): MINZIONI, Paolo [IT/IT]; Pirelli Labs S.p.A., Viale Sarca, 222, I-20126 Milano (IT). ALBERTI, Francesco [IT/IT]; Pirelli Labs S.p.A., Viale Sarca, 222, I-20126 Milano (IT). SCHIFFINI, Alessandro [IT/IT]; Pirelli Labs S.p.A., Viale Sarca, 222, I-20126 Milano (IT).
- Published:
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: OPTICAL TRANSMISSION SYSTEM USING AN OPTICAL PHASE CONJUGATION DEVICE



(57) Abstract: An optical system (10) comprises an optical fiber path (12) suitable for propagating an optical signal at least in a first direction, and a plurality M of optical line amplifiers (13¹...13^M), disposed along said optical fiber path (12), so as to divide said optical fiber path in N spans of optical fiber (14¹...14^N). The spans of optical fiber comprise at least one transmission optical fiber having an effective length L_{eff}. An optical phase conjugation device (15) is associated to one of the amplifiers of said plurality of amplifiers, and is disposed in combination with an optical fiber length (16) having the same sign of dispersion of said transmission optical fiber and a higher dispersion coefficient at a wavelength of said optical signal. The additional accumulated dispersion introduced by the optical fiber length is nearly equal to the dispersion accumulated in an effective length L_{eff} of transmission fiber. A further optical amplifier (19) is associated to the optical fiber length (16).

WO 2004/057779 A1